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APPLICATION

BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE

of

ARLENE AND HENRY WEISENBERG

for

UNITED STATES LETTERS PATENT

on

HAZARDOUS MATERIALS SAFE ENVELOPE

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TITLE OF THE INVENTION

HAZARDOUS MATERIALS SAFE ENVELOPE

INVENTORS

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CROSS-REFERENCE TO RELATED APPLICATION

Not Applicable.

STATEMENT RE: FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

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Not Applicable.

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BACKGROUND OF THE INVENTION

Description of Related Art

An envelope is a container, commonly made from paper, designed to enclose materials for delivery or transport by the United States Postal Service or other type of courier. Traditionally, envelopes are opaque and completely seal the contents from external access prior to the opening of the envelope by the intended recipient. Such features provide adequate assurances of privacy and security concerns in the contents of an envelope.

Recent events in the world perceived as terrorist actions have raised health and safety concerns over the contents of an envelope. Such health safety concerns address the possibility that a person sending an envelope by U.S. Postal Service or other courier may enclose a hazardous material therein (i.e. biological or chemical agent) designed to be released and cause exposure when the envelope is opened.

Field of the Invention

The present invention addresses health safety concerns by providing an envelope that possesses one or more holes through the panels of the envelope. The holes are arranged around the panels of the envelope to greatly reduce the risk of a hazardous material being contained therein.

The holes are of such size to provide ready airborne communication between the inside and outside of a sealed envelope, while still providing security and privacy. Security and privacy are maintained by providing holes which are sufficiently small enough to prevent (i) the removal of materials and (ii) observation of the majority of information contained in the envelope. The holes should be of sufficient size to still permit the passage of any potentially hazardous material (i.e. powdered form of biological or chemical agent).

Such holes are generally positioned in close proximity to the edges of the envelope so that any hazardous material placed near the edge of the envelope will still be subject to being released through the holes.

BRIEF SUMMARY OF THE INVENTION

The main advantage of this invention is to provide an envelope that reduces the risk of transmitting hazardous materials while still providing privacy and security.

It is another advantage of this invention to provide an envelope that provides increased
5 comfort and peace of mind to both couriers and recipients when handling sealed envelopes.

It is a further advantage of this invention to provide an envelope that will prevent a person from sealing a hazardous material agent therein without greatly increasing the risk of exposure to himself.

10 It is still a further advantage of this invention to provide an envelope that will provide the above benefits and will still function in the sorting machines commonly used by the U.S. Postal Service or other common courier services.

According to the present invention, any envelope may be manufactured or prepared having holes to allow the passage of materials from the inside to the outside of the envelope in accordance with the teachings of this invention. Examples of two styles of envelope with which the present invention is compatible are: (i) the standard letter style envelope of varying sizes ranging from 3-
15 5/8" x 6-1/2" to 4-1/8" x 9-1/2"; and (ii) the standard catalog/clasp style envelope of varying sizes ranging from 6" x 9" to 12" x 15-1/2". Envelopes of these types commonly consist of a single sheet of paper divided into a front panel, a back panel, a first side panel, a second side panel, and a closure panel. Each such panel has an interior and an exterior surface.

20 Using either style of envelope, the present invention is manufactured or prepared with one or more holes punched in the one or more of the panels of the envelope. The holes may be of any size or shape but are preferably made by a standard hole punch device. In alternate embodiments, the holes may be shaped with a slight bell curve to present less of a sharp edge and present less opportunity for jamming in mail sorting machines. The holes should be large enough to prevent
25 sealing in of hazardous materials (i.e. powdered biological or chemical agents) while still providing adequate security and privacy.

There are three preferred embodiments of the envelope of the present invention relating to varying placement of the holes around the envelope. In the first preferred embodiment, the

1 holes are placed so that the edges or corners between two or more of the panels bisect the hole.

In the second preferred embodiment, the holes are placed adjacent to the edges and corners between two or more of the panels such that the edge is uninterrupted. In the third preferred embodiment, the holes are placed in close proximity to the edges and corners between two or

5 more of the panels but spaced from the edge such that the holes do not weaken the envelope structure near the edge.

The holes in the envelope prevent unscrupulous persons from using the United States Postal System or other courier service to transmit hazardous materials by causing any hazardous materials contained in the envelope to be likely exposed and released, thereby lessening the likelihood of

10 unknown contamination. While this application describes three preferred embodiments, a person skilled in the art will recognize that the principals can apply to any other arrangement of holes.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1a shows a front view of a standard letter style envelope

Figure 1b shows a back view of a standard letter style envelope

Figure 2 shows an unassembled view of a standard letter style envelope

Figure 3a shows a front view of a standard catalog/clasp style envelope

Figure 3b shows a back view of a standard catalog/clasp style envelope

Figure 4 shows an unassembled view of a standard catalog/clasp style envelope

20 Figure 5a shows a front view of the first preferred embodiment using a standard letter style envelope

Figure 5b shows a back view of the first preferred embodiment using a standard letter style envelope

25 Figure 6a shows a front view of the second preferred embodiment using a standard letter style envelope

Figure 6b shows a back view of the second preferred embodiment using a standard letter style envelope

1 Figure 7a shows a front view of the third preferred embodiment using a standard letter style envelope

Figure 7b shows a back view of the third preferred embodiment using a standard letter style envelope

5 Figure 8 shows a back view of the first preferred embodiment using a standard catalog/clasp style envelope

Figure 9 shows a back view of the second preferred embodiment using a standard catalog/clasp style envelope

10 Figure 10 shows a back view of the third preferred embodiment using a standard catalog/clasp style envelope

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DETAILED DESCRIPTION OF THE INVENTION

The invention described herein presents a structure for providing a hazardous materials safe envelope (10), to provide protection and peace of mind in these times of heightened awareness and security regarding the potential for transmitting hazardous materials through the United States Postal Service or other courier.

Referring to Figures 1a, 1b, and 2, the design and arrangement of a standard letter style envelope (10) is shown. The envelope (10) may be of varying sizes ranging from 3-5/8" x 6-1/2" to 4-1/8" x 9-1/2". Envelopes (10) of this type commonly consist of a single sheet of paper divided into a front panel (20), a back panel (30), a first side panel (40), a second side panel (50), and a closure panel (60). Each such panel has an interior surface (22, 32, 42, 52, 62) and an exterior surface (24, 34, 44, 54, 64).

In forming the envelope (10), the first and second side panels (40, 50) are hingedly connected to first and second side edges (26, 27) of the front panel (20). The first and second side panels (40, 50) are folded over such that the interior surface (42) of the first side panel (40) and the interior surface (52) of the second side panel (50) are adjacent to the interior surface (22) of the front panel (20). The back panel (30) is hingedly connected to bottom edge (28) of the front panel (20). The back panel is folded over such that the interior surface (32) of the back panel abuts at least a portion of the exterior surface (44) of the first side panel (40) and at least a portion of the exterior surface (54) of the second side panel (50). The interior surface (32) of the back panel (30) is secured, commonly by adhesive, to at least a portion of the exterior surface (44) of the first side panel (40) and at least a portion of the exterior surface (54) of the second side panel (50), thereby creating a pocket on the interior (12) of the envelope (10).

To seal the envelope (10), the closure panel (60) is hingedly connected to top edge (29) of the front panel (20). The closure panel (60) may be folded over such that the interior surface (62) of the closure panel (60) overlaps at least a portion of the exterior surface (44) of the first side panel (40), at least a portion of the exterior surface (54) of the second side panel (50) and at least a portion of the exterior surface (34) of the back panel (30). This overlap between the closure panel (60) and each of the first side panel (40), the second side panel (50), and the back

1 panel (30) may be sealed using an adhesive, typically glue, which must be moistened or may be self-adhesive. In this way, the interior (12) of the envelope (10) is sealed from the exterior (14) of the envelope (10).

Referring to Figures 3a, 3b, and 4, the design and arrangement of a catalog/clasp style
5 envelope (10) is shown. The envelope (10) may be of varying sizes ranging from 6" x 9" to 12"
x 15-1/2". Envelopes (10) of this style are formed in and operate in a manner similar to the
standard letter style envelopes with a few exceptions. In the catalog/clasp style envelope (10), the
interior surface (62) of the closure panel (60) typically only overlaps at least a portion of the
exterior surface (44) of the first side panel (40) and at least a portion of the exterior surface (54)
10 of the second side panel (50). However, the closure panel (60) is typically too distant to cover
any portion of the exterior surface (34) of the back panel (30). In addition, the closure panel (60)
may include an opening (66) designed to engage a metal clasp (68) placed on either the exterior
surface (44) of the first side panel (40) or the exterior surface (54) of the second side panel (50).

The various embodiments of the present invention comprise placing holes around the
15 surface of an envelope (10) to permit the passage of materials from the interior (12) of the
envelope (10) to the exterior (14) of the envelope (10). The holes (16) may be of any size or
shape but are preferably made by a standard hole punch device. In alternate embodiments, the
holes (16) may be shaped with a slight bell curve to present less of a sharp edge and present less
opportunity for jamming in mail sorting machines. The holes (16) must be large enough to
20 prevent sealing in of hazardous materials (i.e. powdered biological or chemical agents) while still
providing adequate security and privacy.

Each of figures 1b, 2, 3b, and 4 depict two different styles of envelope (10) for use in the
present invention. Each style of envelope (10) depicted bears an adhesive strip (65) on the interior
surface (62) of the closure panel (60). This adhesive strip (65) may take one of multiple forms.
25 The first form of adhesive strip (65) may consist of a dry layer of adhesive which may be
moistened to become sticky. A second form of adhesive strip (65) may consist of a self adhesive
layer which is not dry and need not be moistened. Both types of adhesive strip (65) are known
in the art.

1 Figures 5a, 5b, and 8, depict the first preferred embodiment of the present invention in use
with either: (i) standard letter style envelopes (figures 5a and 5b); or (ii) catalog/clasp style
envelopes (figure 8). This embodiment of the present invention is manufactured or prepared with
one or more holes (16) punched in one or more of the panels of the envelope (10). The holes (16)
5 are placed such that the edge line (18) or corner line (18) formed between two or more panels
bisects the hole (16). This arrangement of holes (16) presents the greatest likelihood that any
powdery or granular hazardous material placed inside the envelope (10) will pour out of one or
more of the holes (16). A disadvantage to this arrangement of holes is that the gaps or
interruptions in the edge lines (18) or corner lines (18) may cause the envelope (10) to catch or
jam in mail sorting machines.

10 Figures 6a, 6b, and 9 depict the second preferred embodiment of the present invention in
use with either: (i) standard letter style envelopes (figures 6a and 6b); or (ii) catalog/clasp style
envelopes (figure 9). This embodiment of the present invention is manufactured or prepared with
one or more holes (16) punched in one or more of the panels of the envelope (10). The holes (16)
15 are placed in immediate proximity to the edges (18) or corners (18) formed between two or more
of the panels such that the edge (18) or corner (18) is uninterrupted. Ideally, the holes (16) will
be adjacent to the edges (18) or corners (18) of the envelope (10) such that the perimeter of the
circle is tangentially close to the edges (18) or corners (18).

20 This placement of holes (16) presents an increased likelihood, over an unpunched
envelope, that any powdery or granular hazardous material placed inside the envelope (10) will
pour out of one or more of the holes (16). A disadvantage to this arrangement of holes (16) is that
the thin strip of material left at the edges (18) or corners (18) may tear resulting in gaps or
interruptions in the edge lines (18) or corner lines (18) potentially causing the envelope (10) to
catch or jam in mail sorting machines. In addition, a tear of this thin strip of material and a
25 subsequent jam in a sorting machine may result in a substantially greater tear and a compromise
of security or privacy.

Figures 7a, 7b, and 10, depict the third preferred embodiment of the present invention in
use with either: (i) standard letter style envelopes (figures 7a and 7b); or (ii) catalog/clasp style

1 envelopes (figure 10). This embodiment of the present invention is manufactured or prepared with
one or more holes (16) punched in one or more of the panels of the envelope (10). The holes (16)
are placed in close proximity to the edges (18) or corners (18) formed between two or more of
the panels. Ideally, the holes (16) will be spaced a short distance from the edges (18) and corners
5 (18) such that the holes (16) do not weaken the envelope (10) structure near the edges (18) or
corners (18). This short distance should in no event be greater than one-quarter of the distance
from edge (18) to opposite edge (18).

This placement of holes (16) presents an increased likelihood, over an unpunched
envelope, that any powdery or granular hazardous material placed inside the envelope (10) will
10 pour out of one or more of the holes (16). However, the holes (16) are spaced sufficiently from
the edges (18) and corners (18) such that if a foreign powdery or granular hazardous material is
placed in the interior (12) of the envelope (10), a small percentage of such powdery or granular
hazardous material may remain in the envelope in the space between the holes (16) and the edges
15 (18) or corners (18). This arrangement of holes (16) provides the greatest reliability in the stability
of the holes (16) and the envelope (10) while passing through a mail sorting machine. With the
added space between the holes (16) and the edges (18) and corners (18), a tear and subsequent jam
in a sorting machine is less likely to occur.

In any of the above described embodiments, the envelope (10) may also be prepared with
a notice (not shown) printed on the exterior surface (14) notifying the carrier and/or recipient that
20 the envelope is a hazardous materials safe envelope (10) designed to protect the carrier and
recipient and bring the carrier and recipient peace of mind.

Each of the above described embodiments is capable of being used in envelope styles other
than those depicted. A skilled artisan will recognize that each embodiment could be used on its
own or in combination with any of the other embodiments in various envelope styles.

25 The above-described preferred embodiments are intended to illustrate the principles of the
invention, but not to limit its scope. Other embodiments and variations of these preferred
embodiments will be apparent to those skilled in the art and may be made without departing from
the spirit and scope of the invention as defined in the following claims.